

# **RELATIONSHIP BETWEEN PARTICULAR MATTER (PM10) AIR POLLUTION WITH DISEASE AND LUNG FUNCTION AMONG SCHOOLCHILDREN RESIDING NEAR CEMENT FACTORY, 1998**

## ***PENCEMARAN UDARA OLEH DEBU TERNAFAS (PM10) DAN HUBUNGANNYA DENGAN PENYAKIT DAN FUNGI PARU-PARU BAGI KANAK-KANAK SEKOLAH RENDAH DI SEKITAR KILANG SIMEN, 1998***

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### **ABSTRACT**

A cross-sectional study was done in two different areas to assess the association between air pollution with respirable dust (PM10) and respiratory health of primary school children, which was held in September 1998. The study was done in two areas of different air quality status, i.e., Kampong Tasek, Ipoh which is located within a 2 km radius from cement factory, while the other area is Kampong Ayer Puteh, located nearly 80 km north of Ipoh. The aim of the study is to assess the relationship between air pollution by respirable dust (PM10), and respiratory health of primary schoolchildren living in both areas. Respiratory symptoms were assessed with a guided questionnaire while pulmonary functions were measured with a 'Pony' spirometry. Respirable dust was measured with a portable 'MiniVol' air sampler, at 4 locations in each study area. Prevalence of acute respiratory symptoms was high, around 30 % and forced expiratory volume in I second (FEV1) was lower among children from Kampong Tasek. An association between prevalence of respiratory symptoms especially coughs and levels of PM10 were derived and there was a significant difference between both areas. Children in Kampong Tasek were also detected to have significantly high prevalence of eye and skin diseases. Although there was no difference of forced vital capacity (FVC) observed, but there were significant differences of FEV1 compared to both assessed areas. In conclusion, air pollution caused by respirable dust (PM10) is associated with increase in respiratory symptoms and reduced FEV1 of primary school children.

### **ABSTRAK**

Satu kajian irisan lintang telah dijalankan pada bulan September 1998 di dua buah kawasan perkampungan di Perak. Kawasan-kawasan yang terabit ialah di Kampong Tasek, Ipoh yang berkedudukan dalam 2 km jaraknya dengan kilang simen dan Kampong Ayer Puteh, di Daerah Larut dan Matang, Taiping yang merupakan daerah luar bandar yang berada hampir 80 km ke utara daripada Kampong Tasek. Tujuan kajian adalah untuk melihat hubungan diantara pencemaran udara oleh debu temafas (PM10) dengan gejala penyakit dan fungsi paru-paru bagi kanak-kanak sekolah rendah diantara kedua-dua kawasan tersebut. Gejala-gejala penyakit dinilai dengan menggunakan boring soal selidik dan fungsi paru-paru kanak-kanak diukur dengan menggunakan alat spirometer. Paras PM10 diukur dengan alat persampelan 'MiniVol' yang ditempatkan didalam kawasan-kawasan tersebut. Prevalen gejala penyakit respiratori bagi kanak-kanak di Kampong Tasek (Daerah Ipoh) adalah tinggi, sebanyak 30%, dan juga mempunyai paras PM10 yang lebih tinggi berbanding dengan Kampong Ayer Puteh., Nilai FEV1 kanak-kanak di Kampong Tasek juga didapati berasosiasi dengan bererti dengan paras PM10, dimana FEV1 menurun bila paras PM10 meningkat. Didapati penyakit kulit dan mata juga meningkat dan mempunyai hubungan yang bermakna pada kanak-kanak yang tinggal berhampiran dengan kilang simen. Walaupun begitu tidak ada perhubungan yang bermakna didapati dalam penilaian masalah paru-paru kronik diantara kedua kawasan yang dikaji. Kesimpulan nya, pencemaran udara oleh debu temafa (PM10) mempunyai hubungan dengan penambahan gejala penyakit respiratori dan penurunan nilai FEV1 bagi kanak-kanak sekolah rendah.